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OPERATING SYSTEM-1: (GATE 2022) - REPORTS

OVERALL ANALYSIS | COMPARISON REPORT | SOLUTION REPORT

ALL(17) | CORRECT(12) | INCORRECT(5) | SKIPPED(0)

Q. 1 FAQ | Solution Video | Have any Doubt ?

Consider the following statements:
S_1 : The main reason to have TLB hardware is to speed up address translation.
S_2 : In deadlock avoidance scheme knowledge of resources is required apriori.
Which of the following is correct?

A. Only S_1

B. Only S_2

C. Both S_1 and S_2 — Your answer is **Correct**

Solution :
(c)
• The main reason to have TLB hardware is to speedup the address translation by checking first in TLB if there is a miss in TLB then only there is a cache memory.
• In deadlock avoidance scheme i.e. Banker's algorithm knowledge of resources is required apriori.

D. Neither S_1 nor S_2

QUESTION ANALYTICS +

Q. 2 Solution Video | Have any Doubt ?

From Computer's point of view, its operating system is

A. Control program

B. Resource allocator — Your answer is **IN-CORRECT**

C. Neither control program nor resource allocation

D. Both resource allocation and control program — Correct Option

Solution :
(d)
From the Computer's point of view, the operating system is the program most intimately involved with the hardware a slightly different view of an operating system emphasize the need to control the various I/O device and user programs.
These from Computer's point of view, operating system is both control program and resource allocator.

QUESTION ANALYTICS +

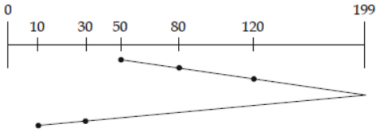
Q. 3 FAQ | Solution Video | Have any Doubt ?

In which of the following algorithm, the disk arm starts at one end of the disk and moves toward the other end, servicing requests till the other end of the disk. At the other end the direction is reversed and servicing continues.

A. LOOK

B. SCAN — Your answer is **Correct**

Solution :
(b)
Assume moving to right, head is at so



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C C-SCAN

D C-LOOK

QUESTION ANALYTICS +

Q. 4 FAQ | Solution Video | Have any Doubt ?

On a system using a disk cache, the mean access time is dependent on the mean cache access time, the mean disk access and the hit rate for the following:
Cache: 1 ms; Disk: 100 ms; Hit rate: 25%, what is mean access time?

A 0.75

B 75.25

C 76 — Your answer is **Correct**

Solution :
(c)
The effective time in this case will be calculated as:
$(1 - p)$ * Cache access time + p * (Cache access time + Disk access time)
$= 0.25 + 0.75 \times 101 = 76$
Hence the answer should be 76 ms since on miss also cache access time needs to be included as cache is accessed first then we come to know whether there is hit or miss.

D 50.50

QUESTION ANALYTICS +

Q. 5 FAQ | Solution Video | Have any Doubt ?

Which of the following disk scheduling algorithm is more suited for a system that performs heavy load on the disk?

A FCFS — Your answer is **IN-CORRECT**

B SSTF

C C-SCAN — Correct Option

Solution :
(c)
SCAN and C-SCAN perform better for systems that place a heavy load on disk because they avoid starvation problem.

D None of these

QUESTION ANALYTICS +

Q. 6 Solution Video | Have any Doubt ?

Consider a system with 8 processes. Where each process needs 3 copies of resource *R*. Maximum units of *R* with which deadlock can occur is _____.

16 — Your answer is **Correct**16

Solution :
16
Given each process requires 3 copies of resource R. In a scenario where each process gets 2 resource, no process can proceed if only 16 resources were there in the system.

P_1	P_2	P_3	P_4	P_5	P_6	P_7	P_8
1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1

So, total 16 resources is maximum limit which will lead to deadlock.

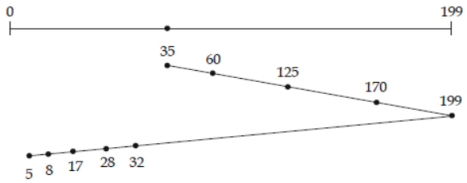
QUESTION ANALYTICS +

Q. 7 ? FAQ ▶ Solution Video Have any Doubt ?

Disk request come into disk driver for cylinders 5, 17, 60, 125, 28, 170, 8, 32. Total moves using SCAN algorithm when disk head is currently partioned at 35 and moving toward higher cylinder number _____. (Disk system has 200 cylinder 0 – 199)

358 Your answer is Correct358

Solution :
358
Cylinder number : 5, 17, 60, 125, 28, 170, 8, 32
In SCAN algorithm disk head move till the last cylinder with servicing the requests then change the direction move till inner most cylinder with servicing requests.



Total moves = (199 – 35) + (199 – 5) = 358

QUESTION ANALYTICS +

Q. 8 ? FAQ ▶ Solution Video Have any Doubt ?

It is a condition in which a process may hold a resource while awaiting assignment of additional resources

A Is called the circular wait condition.

B Is called the hold and wait condition. Your option is Correct

C Is one of the necessary conditions for deadlock. Your option is Correct

D Is impossible with ordered resource allocation.

YOUR ANSWER - b,c | CORRECT ANSWER - b,c | STATUS - ✓

Solution :
(b, c)
• Holding a resource and waiting for additional resources is condition of hold and wait.
• Also hold and wait is one of the necessary conditions for deadlock.

QUESTION ANALYTICS +

Q. 9 ? FAQ ▶ Solution Video Have any Doubt ?

Which of the following is correct?

A In demand paging, a given instruction can lead to page faults. Your option is Correct

B Demand paging brings a page into the memory only when it is needed. Your option is Correct

C Demand paging requires more main memory than normal paging.

D Demand paging can bring entire process into memory at load time (for smaller processes). Correct Option

YOUR ANSWER - a,b | CORRECT ANSWER - a,b,d | STATUS - ✗

Solution :
(a, b, d)
• The process of loading the page into memory on demand (whenever page fault occurs) is known as demand paging.
• Lazy swapper concept is implemented in demand paging in which a page is not swapped into the memory unless it is required. So option (b) is correct.
• Option (c) is false because a process larger than the main memory can be executed because of demand paging. The OS itself loads pages of a process in main memory as required.
• More processes may be maintained in the main memory: Because we are going to load only some of the pages of any particular process, there is room for more processes. This leads to more efficient utilization of the processor because it is more likely that at least one of the more numerous processes will be in the ready state at any particular time.

QUESTION ANALYTICS +

Q. 10

FAQ | Solution Video | Have any Doubt ?

Consider the following statements:
S_1 : Unix inode is used as extension of indexed allocation.
S_2 : Metadata includes all of the file system structure including the actual data or contents of the files.
Which of the following is correct?

A Only S_1 — Your answer is **Correct**

Solution :
(a)
- S_1 is correct, if the file is very-very large indexed allocation will fail to accommodate then we will use unix inode.
- S_2 is false because metadata does not include the actual data or contents of files, it only includes the file system structure.

B Only S_2

C Both S_1 and S_2

D None of these

QUESTION ANALYTICS +